CLAIMS

1. An integrated power device comprising:

a power component including a first high-voltage region, a low-voltage region, a first unidirectional element and a second unidirectional element connected together between said first high-voltage region and said low-voltage region, said first and said second unidirectional elements defining a common intermediate node;

biasing means connected between said common intermediate node and said second high-voltage region; and

a control circuit including a high-voltage region.

2. The device of claim 1 wherein said biasing means comprise:

a contact pad electrically connected to said common intermediate node;

an electrical connection region formed on said second high-voltage region; and

an electrical connection line having a first end connected to said contact pad (and a second end connected to said electrical connection region.

3. The device of claim 2 wherein said power component comprises an edge structure, and said contact pad is set on top of said edge structure.

4. The device of claim 3 wherein said edge structure comprises an equipotential annular region surrounding said power component, and in that said contact pad is set on top of said equipotential annular region.

5. The device of claim 2 wherein said electrical connection line comprises a wire.

6. The device of claim 1 wherein said first and said second unidirectional elements define a first diode and a second diode connected together in antiseries through said common intermediate node.

7. The device of claim 6 wherein said first diode has an anode region formed by said high-voltage region, and a cathode region formed by a first epitaxial layer set on top of said high-voltage region.

8. The device of claim 6 wherein said second diode has a cathode region formed by a second epitaxial layer (8) set on top of said first epitaxial layer, and an anode region formed by a body region of said power component, said body region housed in said second epitaxial layer beneath said low-voltage region.

9. The device of claim 1 wherein said power component is formed in a first chip, and said control circuit is formed in a second chip.

10. The device of claim 9 wherein said second chip is set on top of and is fixed to said first chip.

11. The device of claim 9 wherein said second chip comprises a substrate fixed to said low-voltage region by means of an adhesive layer.

12. The device of claim 11 wherein said adhesive layer is made of insulating material.

13. The device of claim 1 wherein said power component is an IGBT transistor, said high-voltage region is a collector region, and said low-voltage region is an emitter-contact region.

14. An integrated power device, comprising:

a power circuit comprising a first high-voltage region, a low-voltage region, first and second unidirectional elements connected together between the high-voltage region and the low-voltage region to define a common intermediate node;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the electrical contact region;

an edge structure formed in the power circuit and comprising an equipotential annular region surrounding the power circuit, the contact pad of the biasing circuit being set on top of the equipotential annular region; and

a control circuit that includes the second high-voltage region.

15. An integrated power device, comprising:

a power device comprising a first high-voltage region and a low-voltage region;

a first diode and a second diode connected together in antiseries between the first high-voltage region and the low-voltage region to define a common intermediate node therebetween;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the electrical contact region;

an edge structure formed in the power device and comprising an equipotential annular region surrounding the power device, the contact pad of the biasing circuit being set on top of the equipotential annular region; and

a control circuit that includes the second high-voltage region.

16. An integrated power device, comprising:

a power device comprising a first high-voltage region and a low-voltage region;

a first diode and a second diode connected together in antiseries between the first high-voltage region and the low-voltage region to define a common intermediate node therebetween, the first diode comprising an anode region formed by the first high-voltage region and a cathode region formed by a first epitaxial layer set on top of the first high-voltage region, the second diode comprising a cathode region formed by a second epitaxial layer set on top of the first epitaxial layer, and an anode region formed by a body region of the power device, the body region housed in the second epitaxial layer beneath the low-voltage region;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the second electrical region;

an edge structure formed in the power device and comprising an equipotential annular region surrounding the power device, the contact pad of the biasing circuit being set on top of the equipotential annular region; and

a control circuit that includes the second high-voltage region.

17. An integrated power device, comprising:

a power component comprising a first high-voltage region, a low-voltage region, first and second unidirectional elements connected together between the first high-voltage region and the low-voltage region to define a common intermediate node;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the electrical contact region;

an edge structure formed in the power component and comprising an equipotential annular region surrounding the power component, the contact pad of the biasing circuit being set on top of the equipotential annular region;

a control circuit that includes the second high-voltage region; and

the power component formed on a first chip, and the control circuit formed on a second chip, wherein the second chip is set on top of and affixed to the first chip.

18. An integrated power device, comprising:

a power component comprising a first high-voltage region, a low-voltage region, first and second unidirectional elements connected together between the high-voltage region and the low-voltage region to define a common intermediate node;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the electrical contact region;

an edge structure formed in the power component and comprising an equipotential annular region surrounding the power component, the contact pad of the biasing circuit being set on top of the equipotential annular region;

a control circuit that includes the second high-voltage region; and

the power component formed on a first chip, and the control circuit formed on a second chip, wherein the second chip is set on top of and affixed to the first chip, the second chip comprising a substrate fixed to the low-voltage region by means of an adhesive layer.

19. An integrated power device, comprising:

a power component comprising a first high-voltage region, a low-voltage region, first and second unidirectional elements connected together between the first high-voltage region and the low-voltage region to define a common intermediate node;

a biasing circuit connected between the common intermediate node and a second high-voltage region, the biasing circuit comprising a contact pad electrically connected to the common intermediate node;

an electrical contact region formed on the second high-voltage region;

an electrical connection line having a first end connected to the contact pad and a second end connected to the electrical contact region;

an edge structure formed in the power component and comprising an quipotential annular region surrounding the power component, the contact pad of the biasing circuit being set on top of the equipotential annular region;

a control circuit that includes the second high-voltage region; and

the power component comprising an IGBT transistor having a collector region that comprises the first high-voltage region and an emitter-contact region that comprises the low-voltage region, the IGBT transistor formed in a first chip, and the control circuit formed in a second chip that comprises a substrate fixed to the low-voltage region by means of an adhesive layer such that the second chip is set on top of and is affixed to the first chip, wherein the second chip is set on top of and affixed to the first chip, the second chip comprising a substrate fixed to the low-voltage region by means of an adhesive layer.